LEGISLATIVE LIBRARY OF BRITISH COLUMBIA
3 3298 00245 0105

1995 Annual Report

of the

BC Citizen's Advisory Committee

on

Oil Spill Prevention and Response

October 1995

LEGISLATIVE LIBRARY
VICTORIA, BC

Table of Contents

- *Summary of Committee Recommendations*
- *Foreword*
- *Spill Prevention Recommendations - 5 years later*
- *Recommendations related to the Task Force Report*
- *Related Prevention and Response Recommendations*
- *Wildlife Rescue and Response Training*
- *Internet Communications*
- *Committee Members*
- *Appendix:*

  Assessment of Recommendation Implementation Sorted for Risk Reduction

Summary of Committee Recommendations

1.1 The Committee supports the Task Force recommendations on Oil Transfer, and recommends that a comprehensive risk analysis (see 2.1) include a full assessment of a pipeline alternative to shipping oil within Georgia Strait / Puget Sound.

1.2 The Committee supports the Brander-Smith Recommendations, and the provincial position, and recommends that double hulls be mandatory by the year 2000 for all tankers and barges which pose a risk to British Columbia waters.

1.3 The Committee recommends that draft legislation requiring spill prevention plans be prepared by the federal government by 1996, and failing this, the provincial government should proceed with legislation of its own.

2.1 The Committee recommends that an independent, comprehensive risk analysis study on oil movement alternatives be commissioned jointly by the Washington State and BC governments for the Puget Sound / Georgia Strait region.

2.2 The Committee recommends that the federal and provincial governments formalize an agreed upon protocol for all major dynamics of a spill management system.

2.3 The Committee recommends that the Coast Guard put in place and maintain a consistent strict monitoring protocol to ensure compliance with Chapter 36 of the *Canada Shipping Act.*

2.4 The Committee supports the effort to bring a greater efficiency to coastal management through an integrated approach, and recommends that the provincial government consider adopting a formal coastal zone management system.

2.5 The Committee recommends that the provincial government conduct the necessary studies to determine if in situ burning is an appropriate option for response in BC waters.

3.1 The Committee recommends that the provincial and federal lead agencies jointly establish a working group of key wildlife rescue and response training organizations to put in place an integrated, cohesive system for rescue and rehabilitation of BC wildlife impacted by oil spills.

4.1 The Committee recommends that the provincial government make provision for the installation of a Home Page on the World Wide Web to provide Internet users with greater access to information regarding spill prevention and response.

Foreword

The BC Citizen's Advisory Committee was established following recommendation BC-13 in the States/BC Oil Spill Task Force Final Report of 1990. The Committee is comprised of citizens with an interest and some experience in oil spill issues, and is meant to provide advice to the BC representative on the Task Force (Deputy Minister, BC ministry of Environment, Lands and Parks). It also plays a role in public education and information on oil spill matters. The Committee meets regularly, and conducts discussions with government, industry and public representatives on the state and progress of the overall attempt to prevent and respond to spills.

Over the last year there have been three themes which have come to the forefront of activities in the Committee's view. Firstly, the amendments to the *Canada Shipping Act* have resulted in the establishment of a Marine Response Organization for the whole of the BC coast, with a host of attendant regulations, penalties, and procedures for ships and oil handling facilities all aimed at better prevention and response capability. This has taken considerable work by a great many individuals, and should be seen as solid step forward in both logistical streamlining and inter-agency cooperation.

Secondly, there has been a considerable focus by the provincial government on expediting the implementation of several of the recommendations made by the States/BC Oil Spill Task Force (and the Anderson and Brander Smith reports) through the Council of Canadian Ministers of the Environment. The issues of double hulls, rescue tugs, incentives to prevention and spill prevention plans have all received a more thorough examination. This has been accompanied by a review of recommendation implementation and concurring spill risk reduction by BCMELP, not all of which is encouraging.

Thirdly, it has become apparent that the issue of wildlife rescue and response has not received the attention and support it requires, either through funding or policy focus. We are still in a fragmented and confused position and have inadequate ability to address the impact of a medium or major spill on wildlife. There is a clear need for a strong leadership position to be taken by government in assembling the key players into an effective coalition.

The Committee has focused in on several of these issues with this report, and has also produced a communications proposal that will hopefully be a contribution to the prevention/response community and the public at large.

Finally, the Committee, on behalf of the public it represents, would like to extend its appreciation to the many dedicated public servants who labour to advance a social good for which there is little recognition or praise.

Spill Prevention Recommendations - 5 years later

During the fall of 1994 and the spring of 1995, provincial and federal government agencies issued papers purporting to assess the status of recommendations made by the States/BC Oil Spill Task Force, *The David Anderson Report to the Premier on Oil Transportation and Oil Spills, the Brander-Smith Report on Tanker Safety and Marine Spills Response , and the BC Citizen's Advisory Committee 1992 Report.* The provincial and federal agencies held widely differing views on the implementation of the majority of these recommendations (see Appendix 1). Where the federal assessment of a recommendation was noted as 'being implemented' and 'underway', the province mostly characterized the status of the same recommendation as 'reduced effort' and 'not implemented'.

Some of this discrepancy may be viewed as semantics. Where a Coast Guard initiative is in the process of referral to the International Maritime Organization (IMO), and characterized as 'underway', the province may well assess it as 'not implemented', and both views are defensible. The disagreements tend to hinge on how fast action can be taken, and whether legal changes should occur only after the relevant international organizations have taken action. The Citizen's Advisory Committee sees no gain in choosing favourite interpretations. At the same time, it is obvious that such a lack of cooperative expression makes public assessment of the status of recommendation implementation very unreliable, sets up confrontational dynamics, and supports finger-pointing. It would be irresponsible of any citizen's group not to admonish this kind of inter-agency division. The same general public is being served by both levels of government, and would be better served by a concerted effort to produce a jointly agreed upon assessment of the major recommendations.

The States/BC Oil Spill Task Force report made recommendations on a 1st, 2nd, and 3rd priority basis. They indicated:

1st Recommendations which are prevention focused with the highest potential for spill risk reduction,

2nd Recommendations which are response focused with highest expected return in improving and enhancing spill response capabilities,

3rd All other joint recommendations

An examination of the degree of implementation of the different recommendation reveals a surprising dynamic. When simply read in numerical order, the 1st, 2nd and 3rd priority recommendations follow no noticeable pattern as to their current state of implementation. When they are sorted in order or their potential risk reduction, however, it becomes apparent that *the recommendations with the greatest risk reduction potential are those that have been the least implemented* (see Appendix #2). The seven recommendations with the highest risk reduction potential (ranging from 20% to 95%) are:

Joint Task Force	# 1	Petroleum Conservation
	2	Alternative Oil Transportation
	10	Double Hulls
	30	Transfer Operations Review
	11	Onboard Navigational Improvements
BC Reccom.	# 1	Oil Supply Import Alternative
	2	Oil Supply Export Alternative

These recommendations are estimated to have achieved no greater than 10% implementation

The thirteen recommendations which offer a risk reduction of less than 5% are:

Joint Task Force	# 6	Near Miss Reporting System
	7	Tow Cables
	12	Petroleum Facility Worker Training
	17	Strong Sanctions
	21	Liability Limits
	22	Coast Guard Enforcement
	23	Enforcement Staff
	26	Local Participation
	29	Prevention Education
	35	Transfer Containment
BC Reccom.	15	Provincial Legislative Review
	16	Tanker Exclusion Zone
	18	Tug Escorts

These recommendations are estimated to have achieved an average of 52% implementation.

Have we achieved the least where it counts the most, and vise-versa? It is clearly not so simple. A good deal of this dynamic of risk reduction / degree of implementation can be attributed to the fact that small improvements are often easier and less costly to achieve, i.e., 90% implementation of JTF # 35 on Transfer Containment Requirements. Some of the most results-effective recommendations imply integration with widespread social practices and institutions. JTF # 1 on Petroleum Conservation, and the political horsepower required to create all - electric car highways may be decades in the making.

The Citizen's Advisory Committee, upon review of this documentation and representation by stakeholders, wishes to indicate its views on several of these recommendations.

Recommendations Related to the Task Force Report

1.1 Oil Transfer (JTF #2, BC #1, 2)

Three priority recommendations with the potential risk reduction of 50 - 95% (JTF # 2, BC # 1, 2 on Alternative Transportation) show implementation levels of 0%, and yet they do not require society as a whole to alter its standards. They imply an economic investment, but not undue hardship for either the taxpayer or the oil industry , especially considering that an estimated $26 million has already been spent on feasibility studies.

The recommendations concern a proposed west coast pipeline alternative to shipping oil within Georgia Strait/Puget Sound. It would lower the risk of a major spill by 95% for interior waters, and by 50% for the rest of the BC/Washington coast.

In spite of the breadth of opposition to this recommendation, this Committee believes that it would be implemented almost immediately in the wake of a major spill in the waters of the Basin. It is difficult to imagine credible opposition to it, given the worldwide attention that such a calamity would bring, and the rage of coastal and island residents who mostly do not suspect that an alternative to the tankers ever existed.

An earlier report of this Committee stated that the decision not to further explore the pipeline alternative " may one day be bitterly regretted". This assessment stands.

The Committee supports the Task Force recommendations on Oil Transfer, and recommends that a comprehensive risk analysis (see 2.1) include a full assessment of a pipeline alternative to shipping oil within Georgia Strait / Puget Sound.

1.2 Double Hulls (JTF #10)

The double hulling of tankers has been generally agreed upon as a significant risk reduction measure (30 - 50%). This is a recommendation that carries significant costs as well. It is also one where the federal government has chosen to align its implementation schedule with the international schedule worked out under the IMO, and the provincial government supports the expedition of double hulling under a faster timetable.

The IMO, US Oil Pollution Act, and Canada Shipping Act all contain different schedules and breakdowns for construction of, and conversion to double hulled tankers and barges. As well, different schedules were recommended in the David Anderson Report on Oil Transportation and Oil Spills and the Brander-Smith Report on Tanker Safety and Marine Spills Response. A comparative view on these schedules regarding the final date for all tankers and barges in BC waters to be double hulled reads thus:

David Anderson Report on Oil Transportation and Oil Spills	1995
Brander-Smith Report on Tanker Safety and Marine Spills Response	2000
US Oil Pollution Act	2015
Canada Shipping Act / IMO	2025

The provincial government has made its case for expediting the schedule in accordance with the Brander-Smith recommendations to the federal government, and in a brief to the Canadian Council of Ministers of the Environment.

The Committee supports the Brander-Smith Recommendations, and the provincial position, and recommends that double hulls be mandatory by the year 2000 for all tankers and barges which pose a risk to British Columbia waters.

1.3 Prevention Plans (JTF #24)

The recommendation concerning mandatory spill prevention plans would require vessels to provide information about vessel owner/operator communications, policies, accident history, operating procedures, and preventative maintenance programs designed to ensure that safe, well maintained vessels operate in Canadian waters. The requirement for filing such a plan allows the government to assess the degree to which the shipping company and crew regard spill prevention as part of doing business. It focuses on the 'human error' aspects of marine shipping, the part which is generally responsible for most spills.

Spill prevention plans are already mandatory in Washington State. Their Office of Marine Safety reports that these plans, in effect since September 1993, have proven to be very effective.

The status of this recommendation has similar dynamics to that of double hulling. The federal government considers it 'underway', in that it will be implemented by the IMO in July 1998. The provincial government has prepared draft legislation that would require spill prevention plans for all vessels over 300 gross tons and all chemical or oil tankers and barges. It has also registered its dissatisfaction with waiting another three years for a measure that could be implemented sooner.

The Citizen's Advisory Committee is concerned that the schedule for international implementation under the IMO may be delayed by unforeseen circumstances, thereby allowing the date for implementation in Canada to be delayed as well. At the very least, Canada should commit to implementation by 1998 regardless of IMO procedures. An indication of this commitment would be the preparation of draft legislation by 1996.

The Committee recommends that draft legislation requiring spill prevention plans be prepared by the federal government by 1996, and failing this, the provincial government should proceed with legislation of its own.

Related Prevention and Response Recommendations

2.1 Risk Analysis

The States/BC Oil Spill Task Force Subcommittee on Prevention Alternatives commissioned several studies, among them "Oil Spill Risk Assessment for Southern BC/ Northern Washington Coast" , and "Environmental Risk Evaluation for BC and Northern Washington." While these studies were essential for the Task Force as basic reference, it is clear that experience has added to the picture that could be defined at that time. The 'consequence cost ' (cleanup, fisheries, properties, tourism, etc.) for a spill over 4.2 million gallons in Puget Sound or the Strait of Georgia was estimated at $2.5 billion. This must have seemed a brave and staggering figure at the time.

The Exxon Valdez required over $2 billion in response effort. It was in a remote, virtually undeveloped, sparsely populated wilderness. Little logic is required to estimate that the 'consequence cost' in North America's fastest growing, best economy, high tourism, destination hot spot may be one, even two, orders of magnitude greater.

Given the complexity of oil transfer systems, their alternatives, the environmental conditions, the varied ecology, the value of lands and waterfront, existing business investment in non-oil related activity, the recent dramatic growth in population and activity in the Puget Sound / Gulf of Georgia, and the short and long term effects of a medium / major spill, it is evident that more significant efforts to present risk analysis options are required.

An independent, comprehensive risk analysis study for Prince William Sound has recently been commissioned by the Alaska Citizen's Advisory Committee. The study is anticipated to cost approximately $1 million . It will no doubt lay the groundwork for conducting similar examinations in waters of comparable dynamics.

The Committee recommends that an independent, comprehensive risk analysis study on oil movement alternatives be commissioned jointly by the Washington State and BC governments for the Puget Sound / Georgia Strait region.

2.2 Governing Agencies

The Program Review and Harmonization programs of the federal and provincial governments over the last eighteen months have dramatically altered the administrative landscape for ocean-related activity in BC. This is seen in the amalgamation of the Canadian Coast Guard and parts of Environment Canada into the Dept. of Fisheries and Oceans. It is also apparent in the degree of cuts to the operating budgets of all three agencies.

There are many trade-offs in this process. It is likely that 'harmonization' will allow for greater use of expensive assets like ships, and yet such large budget cuts imperil the manpower required to meet the tasks involved. Of key importance to spill prevention and response in this process is the production of a system that ensures a greater operational and protocol agreement between federal and provincial governments.

This need is illustrated by the previously mentioned disagreements on recommendation implementation, but is also critical in a number of other areas. The system of sensitivity mapping for resource interests (OSRIS) that has been developed by the province, and given much attention by resource agencies around the world, has not been sufficiently supported by federal agencies. Even more critical, there is still not a formal, practical, spill management system agreed to by the key parties: the provincial and federal governments, the 'Responsible Party' and the Response Organization. Since the Nestucca spill in 1989 such a protocol has been identified as a priority by all parties, yet it is still undelivered.

The Committee recommends that the federal and provincial governments formalize an agreed upon protocol for all major dynamics of a spill management system.

2.3 Coast Guard Canada

Chapter 36 of the *Canada Shipping Act* now requires vessels and oil handling facilities to produce spill prevention plans, and requires the Coast Guard to inspect these plans. Given the extent of budget cuts being made within the Coast Guard, the Citizen's Advisory Committee is concerned at the absence of a strict monitoring protocol to ensure compliance with these regulations. As these are 'human factor' , preventative measures that are dependent upon enforcement for effectiveness, it is critical that enough effort is devoted to ensure compliance.

The Committee recommends that the Coast Guard put in place and maintain a consistent strict monitoring protocol to ensure compliance with Chapter 36 of the *Canada Shipping Act.*

2.4 Coastal Zone Management

Jurisdiction over BC's waters and coasts is shared between numerous federal and provincial agencies. In general, federal agencies have authority over the oceans, and provincial agencies have jurisdiction over the water inside the jaws of the land, including Georgia Strait. This structure of management is often very fragmented, as issues of water quality, marine protected areas, aquaculture, fishing, tourism, transport and upland development are all addressed through different, sometimes unconnected offices.

Marine spills from ships and oil handling facilities regulated pursuant to the *Canada Shipping Act* represent only one source of pollution spills and discharges. The accumulative amount of oils and hazardous substances released into the marine environment from onshore activities is less apparent, but also of deep concern to the Committee. The provincial government is currently preparing legislation with a pollution prevention focus (the *Environmental Protection Act*). It has also prepared several studies on the potential merits of a Coastal Zone Management system, incorporating experience from other coastal states worldwide.

The Committee supports the effort to bring a greater efficiency to coastal management through an integrated approach, and recommends that the provincial government consider adopting a formal coastal zone management system.

2.5 Response Research and Development

Mechanical oil removal techniques have for the greater part been upgraded with the highest current technology. Mechanical means of removing oil from the water show the least initial impact to the surrounding environment, but are not impact free, in that most of the oil is not removed, and the oil/water mixture that is removed must be treated, transferred, stored, and then incinerated, landfilled or recycled.

Among the remaining options for response are in situ burning and the application of dispersants, both of which have been the subject of considerable research. Major test burns have been conducted during the Exxon Valdez spill, and recently during the Newfoundland Offshore Burn Experiment (NOBE). The states of Alaska, Washington, Idaho and Oregon have prepared In Situ Burning Policy and Operational Guidelines. They outline the protocol for pre-approval, exposure limits for emissions, case-by-case scenarios, and monitoring.

The attraction of in-situ burning as a response method is that it is capable of removing up to 98% of the spilled oil from the marine environment. To balance this, there is considerable concern over the resulting air pollution and its impact on the environment and human health. The emissions from a burn contain mostly carbon and carbon dioxide, but also contain carcinogens. Because of this, the conditions for choosing in situ burning may be dependent on wind direction and location. As well, as the oil mixes with seawater it quickly becomes less burnable, creating a situation where the decision to burn must be made very quickly. For this reason several governments have prepared response plans in advance, outlining potential spill conditions that may merit this response.

At the July, 1995 meeting of the States/BC Oil Spill Task Force, the government of British Columbia chose not to sign on to a joint agreement concerning the use of in situ burning as a response method. The reason for this reluctance appears to be concern over the air emissions and the potential impact on human health. At the same time, it appears that this concern is not resulting from research already conducted on the subject, but is rather the result of insufficient resources within the ministry to properly address the issue as it pertains to BC.

In situ burning has the potential to achieve remarkable results in certain definable spill cases, and given the decision other coastal governments, after extensive examination and effort, have moved to include it in their response options.

The Committee recommends that the provincial government conduct the necessary studies to determine if in situ burning is an appropriate option for response in BC waters.

Wildlife Rescue and Response Training

3.1 Wildlife Response Coalition

The Committee's meetings with federal and provincial agencies and other spill - related organizations in BC have revealed a weakness in the progress of activity concerning wildlife rescue and response. The States/BC Oil Spill Task Force recommendation # 32 urged the development and oversight of joint programs which provide wildlife rescue volunteer training, and cooperation with industry and others to aquire wildlife rescue equipment, including mobile equipment.

There have been achievements in this field, with some training, some equipment preparation, and some success during small spill incidents in the field. Clearly the system has not been strongly tested since the Nestucca and Tenyu Maru spills several years ago, and there is considerable concern that a significant spill will still find us unprepared for the volume of work required.

The key element which seems to be lacking is a dedication by all parties to come together and create a cohesive wildlife rescue and response capacity. The principal players, Environment Canada, BCMELP, the SPCA, and other NGO's have continued to build programs and relationships, but the current framework is altogether too piecemeal to be effective. Resources are scarce, but the situation could be vastly improved through leadership by the federal and provincial agencies.

Significant components are required to achieve an effective rescue capacity in BC:

- Additional equipment to supplement the existing inventory
- Consistent, professional wildlife rescue and response training at varying levels of expertise

The Committee recommends that the provincial and federal lead agencies jointly establish a working group of key wildlife rescue and response training organizations to put in place an integrated, cohesive system for rescue and rehabilitation of BC wildlife impacted by oil spills.

4.1 Internet Communications

The Committee believes that the future of public education and information exchange on oil spill prevention and response issues will make full use of the Internet. In anticipation of this, the following document has been assembled, as an example of the configuration that can be easily installed through a World Wide Web home page. The document is written in Hypertext, the mode of information structure used on the WWW. If an underlined phrase or title is clicked with the mouse pointer, the reader is taken to the document or new address indicated by the hypertext.

The Committee noted that a brief search of the Internet led to surprisingly few sites dealing with spill - related information. It may therefore be expected that such a nexus dealing with all aspects of the issue would be well used by the increasing number of public and professional Internet users.

The Committee recommends that the provincial government make provision for the installation of a Home Page on the World Wide Web to provide Internet users with greater access to information regarding spill prevention and response.

OIL SPILL RESEARCH INFORMATION

A report for the Citizen's Committee on Oil Spills , Sept. 1995.
The following document indicates some of the recent information available on Oil Spill Research. It has been done in hypertext format and is continually undergoing revision and updating at the following Internet site: http://vvv.com/lbpearson/esoilspl.html
For further information contact: *garryl@iceonline.com(Garry Fletcher)*

Topics dealt with in this document

- Oil Spill histories
- Remote sensing techniques
- Toxicity testing on organisms
- Bioremediation
- Fate and effects
- Analytical techniques
- Spill modeling

PART 1. Data Bases on Oil Spill Research

PART 2 . Resource People for Canadian Oil Spill Research.

PART 3. Internet Sites for Oil Spill Information

PART 1 : DATA BASES ON OIL SPILL RESEARCH

- Bibliography of Aquatic Oil Pollution Fate and Effects--CD-ROM
- EPA database
- LSU OSRADP Bibliography
- Polar Pac Database

- Hunter, S.P. and J.H. Vandermeulen. 1994. *Bibliography of Aquatic Oil Pollution Fate and Effects.* Environmental Studies Research Funds Report No. 130. Ottawa, 1 CD-ROM : 1994 Bedford Institute of Oceanography.

(CD-ROM Available free from The National Energy Board of Canada, Calgary Alberta, 403-292-4800.)

Background: The bibliography is based on a number of earlier bibliographies. and updates the existing references from 1987 to 1993 . The number of total references is 8,252. Approximately 2,000 of these are new references. Most of the new references include abstracts. It includes references in the scientific and technical literature to documented observations on the fate and effects of oil pollution , in aquatic environments. While the majority of the references come from the marine environment, also included are relevant references relating to oil spills in the fresh water environment (e.g. streams, lakes).

The bibliography does not include references to groundwater, nor does it include references of a technical or analytical nature describing the chemistry and chemical analysis of oils, except where these relate to the fate and effects of the spilled product. The bibliography is international in scope. The majority of the literature is about north temperate environments in North America and Europe, however, some of the literature is about near tropical and tropical environments. The material is up to date as of September, 1993. There were no limitations on language of the scientific literature, and citations are included that are in a number of languages. The literature cited includes monographs, scientific journals, conference proceedings, technical reports. theses, and government , corporate and institute reports.

Return to database Contents

- At UCLA, the EPA has compiled a data base that lists 7000 sources. 700 of these deal with LC 50's (i.e.toxicity) effects on a variety of organisms.

Return to database Contents

- The Louisiana State OSRADP bibliography : This is a database published in Word 6.0 format for Windows. It consists of a 578 page document, which may be downloaded from the Internet site referred to in Part 3. There is also a text version of this that may be accessed by individual chapters also accessible from the Internet site.

Return to database Contents

- The POLAR-PAC database. POLAR INFORMATION: The Oil Spill Public Information Center newspaper database contains nearly 30,000 citations to newspaper articles dealing with oil spills, particularly the Prince William Sound oil spill of 1989. This database is part of a large database on Arctic affairs called PolarPac3. This is a multidisciplinary data base that is international in it's coverage, specializing in humanities and social sciences but having a section on oilspills as well (to 1994). The monographic and serial files in PolarPac are available on-line through WLN either directly or through Internet. Contact Sharon M.West, University of Alaska, 907-474-6841. The on-line environment provides up-to-date access to the holdings of several Alaskan libraries, while a CD-ROM (available for $300 from WLN PO Box 3888, Lacey, WA 98503, USA, 1-800-DIAL WLN.) provides a useful tool for libraries or isolated researchers.

Return to database Contents Return to top of page

PART 2:

Resource People for Canadian Oil Spill Research.

The following list is by no means exhaustive. These individuals are however able to give advice on where to get information on all areas of oil-spill related research.

- **Environment Canada - Ottawa , Mervin Fingas , Environmental Emergency Technology Division .**

His main focus is on properties of chemical spills, development of fingerprinting techniques, etc. (for clean-up related research. Further details are provided in the 1994 Arctic &Marine Oil Spill Program (AMOP) Technical Seminar Proceedings. The Office of Environment Canada has no R&D , they are the people that have the emergency centre providing a link between the regions and the politicians. Theirs is more of an administrative role.
Phone: 613-998-9622

- **Environment Canada - Edmonton, Gary Sergy , Emergency Science Division..**

He runs a national research program, with most of the research being done in British Columbia, on contracts. Some of it deals with the effects of counter-measures and clean-up. (This year the focus will be on oil behavior studies, natural substrates and mixed coarse sediment beaches. They are trying to understand the trade-offs involved in the decisions to clean some beaches and not others. They are also testing the toxicity of sorbents , and are developing a set of standards for testing crude oil. Bioremediation using natural organisms is also under research. In addition they are developing a shore line assessment manual which will enable the SCAT team to standardize procedures for the recommended technology that should be used in clean-up.
Phone: 403-951-8855

- **Department of Fisheries and Oceans, Mike Flynn, Vancouver.**

Mike has a computer searchable index in his office with an extensive bibliography of fish toxicology -related research.
Phone: 604-666-6878

PART 3:

INTERNET SITES WITH OIL SPILL RESEARCH INFORMATION

CONTENTS:

(*This list is numbered only for convenience. Sites are added as they are located)*

NOTE: Press on the **hypertext number** for more information.
Press on the **hypertext URL** for a direct link to the site.

1. Environment Canada http://www.doc.ca/tandi/ccpa/ip11/c11_00.html

2. B.C. Ministry of Environment, Lands and Parks http://www.env.gov.bc.ca/

3. OSRADP at Louisiana State University http://www.lib.lsu.edu/osradp/osradp.html

4. HAZMAT-SEATTLE (NOAA) http://seaserver.nos.noaa.gov/organization/orca.html

5. Office of Coastal Resource Management (NOAA)

http://www.noaa.gov/ceeh/cceh.html

6. THE EPA Environmental Protection Agency USA

http://www.hpcc.gov/blue94/section.4.9.html

7. SATELLITE tracking of Oil Spills (CGS)

http://www.usgs.gov/doi/minerals-management-service.html

8. Petroleum BIOREMEDIATION Web Site http://tigger.jvnc.net/~levins/microbes.html

9. SOUTH FLORIDA Oil Spill Research Center

http://www.rsmas.miami.edu/groups/oprc.html

10. WORLD CONSERVATION MONITORING Center - Russian Oil Spill
http://www.wcmc.org.uk/infoserv/emergncy/oil_spills/pechora/press.html

Return to Contents

ANNOTATED LISTING

1. Environment Canada
http://www.doc.ca/tandi/ccpa/ip11/c11_00.html
Information from the Canadian government that deals with Environmental Emergencies. Included is an article about the Canadian Experience with such emergencies, Elements of the Canadian Approach, The International framework , The legislation , technology and options.
Contents

---

2. B.C. Ministry of Environment, Lands and Parks
http://www.env.gov.bc.ca/
Information about this ministry and their programs is available. It should eventually contain information from the emergency planning division .
Contents

---

3. OSRADP at Louisiana State University
http://www.lib.lsu.edu/osradp/osradp.html
The LSU Oil Spill Research and Development Program (OSRADP) This consists of Selected Abstracts and Bibliography of International Oil Spill Research (1994) One can download the following files (in WORD 6 format)

- A-K (pp.1-300) (1.1 Megs)
- L-Z (pp. 310-578) (1.0 Megs)

Contents

---

4. HAZMAT-Seattle (NOAA)
http://seaserver.nos.noaa.gov/organization/orca.html
The Hazardous Materials Response and Assessment Division is based in Seattle, Washington. Hazmat scientists work to use sound science to influence and improve environmental pollution policy decisions by the U.S. Federal agencies responsible for protecting natural resources. Hazmat addresses coastal and atmospheric pollution resulting from spills of oil and hazardous materials , as well as problems cased by hazardous waste sites in coastal areas .
Major activities of the Division include 1) reducing risks to coastal habitats and resources from oil and hazardous chemical releases through preparedness and response activities; 2) protecting and restoring NOAA trust habitats affected by hazardous materials releases in coastal habitats; 3) advancing the state of knowledge about oil and hazardous materials interactions in coastal environments through research , development, and technology transfer; and 4) designing, applying, and maintaining the capability to use complex information intelligently to support planning and response to environmental problems.
Contents

---

5. Office of Coastal Resource Management (NOAA) .
http://www.noaa.gov/ceeh/cceh.html
This site deals more with planning for protection of marine sites in the USA. OCRM has three programs :

- The Coastal Zone Management Program
- The National Marine Estuarine Research Reserve System
- The National Marine Sanctuary Program

Direct access to URL's within this site give links to the programs of the specific Coastal States.
Contents

---

6. THE EPA , Environmental Protection Agency USA
http://www.hpcc.gov/blue94/section.4.9.html
This will probably be a major on-line source in the next few years for information on oil spills. The emphasis is on development of accessible Environmental Assessment Tools for computer use.
Contents

---

7. SATELLITE tracking of Oil Spills, Center for Coastal Studies,

SCRIPPS OCEANOGRAPHY INSTITUTE.
(http://www.usgs.gov/doi/minerals-management-service.html
As part of the Santa-Barbara Channel- Santa Maria Basin Circulation Study , near real time data can be provided to be used in oil spill response. CCS has provided these services during a real spill and several OilSpill Drills put on by the Marine Spill Response Corporation, the Minerals Management Service and the U.S. Coast Guard.
Contents

---

8. Petroleum BIOREMEDIATION Web Site
(http://tigger.jvnc.net/~levins/microbes.html)
Bioremediation is the process of using hydrocarbon-oxidizing bacteria to break down the chemical structure of petroleum compounds into less complex, fertilizer -like substances that are not hazardous or regulated.
Contents

---

9. SOUTH FLORIDA Oil Spill Research Center
(http://www.rsmas.miami.edu/groups/oprc.html)
The Ocean Pollution Research Center (OPRC) was established in 1992 at the Rosenstiel School of Marine and Atmospheric Science, University of Miami, as a center of innovation for developing strategies, methodologies, and technologies to deal with ocean pollution, including oil spills, thermal pollutants, marine debris, and waste discharges.
The initial research focus is on modeling and observing oil spill trajectories in the subtropical and temperate coastal waters of the southeastern United States and the Gulf of Mexico, emphasizing the critical application of remote sensing and computer modeling technologies. For example, several types of surface drifters are being evaluated as proxies for oil spill trajectories. This work is coordinated through the Ocean Prediction Experimental Laboratory in AMP.
The Rosenstiel School recently purchased OSCR , the Ocean Surface Current Radar system. It measures and maps current speed and direction over large tracts of ocean in real time. This instrument is a state-of-the-art research and applications tool for understanding basic physical processes as well as predicting or assessing oil or chemical spill trajectories. The Rosenstiel School is the first owner of an OSCR system in North America.
Contents

---

10. THE WORLD CONSERVATION MONITORING CENTER
http://www.wcmc.org.uk/infoserv/emergncy/oil_spills/pechora/press.html

This site has reports on the RUSSIAN OIL SPILL in 1994.

outline: United Nations Environment Programme / UN Department of Humanitarian Affairs (DHA), Environment Unit 27 OCTOBER 1994 2 NOVEMBER 1994 18 NOVEMBER 1994
excerpt: United Nations Environment Programme / UN Department of Humanitarian Affairs (DHA), Environment Unit * 26/10/94 INFORMATION REPORT NO. 1 * 27/10/94 INFORMATION REPORT NO. 2 * 02/11/94 INFORMATION REPORT NO. 3 * 02/11/94 INFORMATION REPORT NO. 4 26 OCTOBER 1994 RUSSIAN FEDERATION - **OIL SPILL** DHA-GENEVA 94/0440 DHA-GENEVA INFORMATION REPORT NO. 1 *Reports are received on a major **oil spill** in the Arctic region of the Russian Federation. *According to this information a ruptured pipeline has **spilled** between one hundred thousand and two million barrels of heavy crude **oil** near the city of Usinsk in Russia's Komi Province. *
Home Page Index Comments Russian Arctic **Oil** Pipeline **Spill** Contents * Location * Environment * **Oil** Industry * Impacts of **Oil** Spills * Protected Areas * Other Important Areas * Species Likely to be Affected * Mammals * Birds * Freshwater Fish * References * Acknowledgments For further information on this or other WCMC projects, please contact: The Information Officer World Conservation Monitoring CentreTel: +44 (0)1223 277314 219 Huntingd..
Contents
Return to top of page

Return to the Environmental Systems Page
Return to the Main Menu.

The Citizen's Advisory Committee on Oil Spills

Committee Members

Charlie Bellis

Mr. Bellis is a fisherman living in Masset. He is an elder of the Haida Nation, and has served on both Band and Tribal Councils for his people.

Martyn Green

Mr. Green has been actively combating oil spills for over 25 years. He has spent the last 18 years in Vancouver as general manager of Burrard Clean Operations, a division of the Western Canada Marine Response Corporation.

Gary Fletcher

Mr. Fletcher is an instructor of biology and environmental systems at Lester B. Pearson International College in Victoria.

Michael Moore (Chair)

Mr. Moore is the Executive Director of the Saltchuck Institute in Port Hardy. The Institute is focused on sustainable development in marine resources, and serves as the Secretariat for the Coastal Community Network.

Linda Nowlan

Ms. Nowlan has a degree in law and international law and policy. She is a staff lawyer with the West Coast Environmental Law Association in Vancouver.

Dee Walmsey

Ms. Walmsey is president and founder of the Boundary Bay Oil Spill Society in White Rock. She has worked extensively in the fields of wildlife rescue and training and public education, and produced the video documentary: Bayguard; The Impact On An Oil Spill In Boundary Bay.

Appendix:

Federal / Provincial Assessments of Recommendation Implementation

Assessment of Recommendation Implementation Sorted for Risk Reduction

---

States/BC Oil Spill Task Force
July 1995 Status Report
on Implementation of Prevention Recommendations
(with particular emphasis on their applicability to British Columbia)

NOTES:

1. **Recommendations are listed numerically with first priority joint recommendations on page 1 (these were described in the Final Report (1990) as those recommendations "which are prevention focused and have the highest potential for spill risk reduction", (page 48)); and third priority and BC recommendations on page 2. A more complete description of these recommendations is found in Attachment A.**

2. **The Potential Maximum % Risk Reduction is derived from estimates provided by DF Dickins Associates Ltd., and from other studies or staff assessments. It is important to note that these percentages are not additive. If all improvements studied by the Task Force were fully implemented (including the alternative transportation/backout option: Rec.#-2, BC-1,BC-2), the maximum predicted reduction of spill risk for all tank vessels in transit would be in the order of 77%. Recommendations are sorted by order of % Risk Reduction on pages 3/4.**

3. **The Estimated Degree of Implementation in last 5 years is a rough estimate of how close to full implementation the recommendation is. Several of the recommendations have been more fully implemented in Washington or Alaska than within British Columbia and vice versa.**

4. **The Canadian Federal Actions, Commitments or Comments are taken from recent correspondence, reports, or from the Canadian Coast Guard "Revised Status of Spill Prevention Recommendation" dated Jan 31/95 (Attachment B).**

5. **Provincial Comments are from staff assessments, recent CCME or other reports (Attachment C).**

States/BC Oil Spill Task Force Final Report (1990) Spill Prevention Recommendations

a summary of their present status and applicability to British Columbia

Recommendation			Potential Maximum % Risk Reduction	Estimated Degree of Implementation in last 5 years	Canadian Federal Action/Commitment/Comments (related Brander-Smith #, CCG Jan95 report status)	Provincial Comments
Number	*Priority*	Description				
2	*1st*	Alternative Oil Transportation	50-95%	0%	None see comments under related recommendations: BC-1, BC-2	This recommendation has the highest practical potential risk reduction achievable for preventing major spills: 95% for Georgia/Puget basin, 50% for rest of BC/WA coast. Major impediment is political/refining industry opposition.
BC 1	*1st*	Oil Supply Import Alternative	50-95%	0% no implementation although $26 million invested in feasibility studies, no application filed.	None - not implemented. No detailed evaluation or comprehensive comparative risk analysis initiated.	same as for Joint Task Force Recommendation #2 above
BC 2	*1st*	Oil Supply Export Alternative	50-95%	0%	None - not implemented. No detailed evaluation or comprehensive comparative risk analysis initiated.	same as for Joint Task Force Recommendation #2 above
1	*1st*	Petroleum Conservation	10-95%	5%	Minimal	Little practical likelihood that this recommendation will be even partially implemented within next 20 years.
10	*1st*	Double Hulls	40-60%	10%	"being implemented in concert with US and International Requirements" (BS:6-47), CCG#3,#5	reduced effort apparent: see DF Dickins study due July95
30	*3rd*	Transfer Operations Review	5-50%	10%	not considered directly see also TF#2, BC-1, BC-2	comprehensive study of the appropriateness of existing west coast locations, and spill risks due to hazardous weather, traffic or ecological sensitivity has not yet been carried out.
3	*3rd*	Tug Escorts - Single Propulsion	8-35%	90%	"research completed" CCG#7,#25b: Robert Allan CCME study/May95 shows increased capability and rescue tug effectiveness	not yet mandated in BC
4	*3rd*	Tug Escorts - Tonnage Requirements	8-35%	60%	"research completed" CCG#7,#25b: Robert Allan CCME study/May95 shows increased capability and rescue tug effectiveness	not yet mandated in BC
11	*1st*	Onboard Navigation Improvements	14-19%	10%	"underway" CCG#11. ECDIS performance standards to be presented to IMO for approval Nov95.	not implemented: slow rate of implementation for highly rated equipment hard to justify
13	*1st*	Mariner Qualifications	12-17%	50%	"implemented" CCG#20; "bridge simulators not considered essential"	Major efforts underway in reducing human error as contributing cause to accidents
5	*1st*	Vessel Traffic Service Systems	15%	40%	"partially completed" CCG#8	Several potential improvements not yet fully implemented
8	*1st*	Vessel Safety Measures	15%	30%	not considered directly; see CCG comments under related TF#3,4,5,13,15,16, BC-14,BC-18	Partially implemented
BC 14	*3rd*	Federal Implementation	15%	30%	not considered directly	no formal response indicating federal action on OSTF recommendations
15	*1st*	Crew Requirements	9-11%	50%	alternatives in place: CCG#24	Significant improvements for Canadian/US vessels, concerns with other foreign vessels

NOTE: Recommendations are listed in order of potential maximum % risk reduction achievable.

Assessment of Prevention Recommendation Implementation Sorted by % Risk Reduction

24	*1st*	Prevention Plans	10%	10%	"underway"(CCG#1) to be implemented by IMO through ISM Code for convention vessels Jul98. CCME study May95	Prevention Plans similar to those required by Washington OMS should be required in Canada. BC Regulation drafted.
28	*1st*	Vessel Inspections	10%	50%	35% of foreign vessels inspected 93/94, all foreign tankers inspected on first visit each year. CCG#4	significant improvement since 1990; understaffing, impacts of proposed privatization remain concerns
18	*1st*	Proof of Financial Responsibility	<5%	15%	related TF#19,20,21 /CCG#9/BS:5-12 "to be considered (1996)"	Financial Preparedness study by Aangus Fogarty due July95
21	*1st*	Liability Limits	<5%	15%	related TF#18,19,20, /CCG#9/BS:5-12 "to be considered (1996)"	Financial Preparedness study by Aangus Fogarty due July95
22	*1st*	Coast Guard Enforcement	<5%	30%	see related TF#17,28; CCG#29 "not implemented"	concerns that Coast Guard cuts will result in reduced enforcement, inspections
6	*3rd*	Near Miss Report System	<5%	30%	no status - "ships can report, reports filed, interpretation subjective" CCG#18	to be advanced in OSTF 95/96 Annual Work Plan-Task#4
7	*3rd*	Tow Cables	<5%	30%	"to be implemented" CCG#14b, 16	improvements underway
23	*3rd*	Enforcement Staff	<5%	30%	not considered directly	recent improvements may be at risk
16	*3rd*	Dedicated Tug Crews	<5%	40%	"alternatives in place": CCG#21	improvements underway
12	*1st*	Petroleum Facility Worker Training	<5%	50%	"on-going" CCG#15	Significant improvements underway
17	*1st*	Strong Sanctions	<5%	50%	"partially implemented" BS:3-4,CCG#13; also BS:5-13, CCG#19 "implemented"	reduced effort
29	*1st*	Prevention Education	<5%	50%	none directly, but "pollution prevention is a CCG preoccupation"	much accomplished in small spill/chronic prevention education (continuing in OSTF 95/96 Annual Work Plan-Task#5), virtually nothing in major spill prevention education
BC 15	*3rd*	Provincial Legislative Review	<5%	50%	n/a	Spill Prevention Plan regulation drafted, review of Waste Management Act completed
BC 18	*3rd*	Tanker Exclusion Zone	<5%	60%	"completed" BS:6:43, CCG#26; related designation of Georgia/Fuca region as 'Special Area' under IMO "not implemented"	Compliance with routing is voluntary. With increasing foreign tanker traffic, CCG should provide annual report on non-compliance, near-misses and other infractions. To be reviewed in OSTF 95/96 Annual Work Plan-Tasks#2,4
26	*1st*	Local Participation	<5%	70%	to be considered through Regional CAC's	partially implemented through BC13: Citizens Advisory Committee
35	*1st*	Transfer Containment	<5%	80%	not considered directly	standard practice at major terminals
BC 18	*3rd*	Tug Escorts	<5%	90%	Robert Allan CCME study completed May95	not yet mandated in BC. To be reviewed in OSTF 95/96 Annual Work Plan-Task#3
9	*3rd*	Tow Systems	1-2%	50%	"to be implemented" CCG#14b, 16	improvements underway
BC 13	*3rd*	Citizen's Advisory Committee	?	100%	Federal Regional CAC's being considered: "limited by law to seven people", CCG presentation, MSP Conference/4APR95	BC CAC established 1991

NOTE: Recommendations are listed in order of potential maximum % risk reduction achievable.